

# Notice of Allowability

Application No.

10/736,327

Examiner

Long K. Tran

Applicant(s)

CROSWELL ET AL.

Art Unit

2818

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS. This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 01/09/2006.
2. ☒ The allowed claim(s) is/are 10, 11, 13-21, 27, 28 and 30-38.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
  - a) ☐ All b) ☐ Some\* c) ☐ None of the:
    1. ☐ Certified copies of the priority documents have been received.
    2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

\* Certified copies not received: \_\_\_\_\_.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.  
**THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.**

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
  - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
    - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date \_\_\_\_\_.
  - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date \_\_\_\_\_.Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

## Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08),  
Paper No./Mail Date 12/15/03
4. ☐ Examiner's Comment Regarding Requirement for Deposit  
of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☐ Interview Summary (PTO-413),  
Paper No./Mail Date \_\_\_\_\_
7. ☒ Examiner's Amendment/Comment
8. ☒ Examiner's Statement of Reasons for Allowance
9. ☐ Other \_\_\_\_\_



David Nelms  
Supervisory Patent Examiner  
Technology Center 2800

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election of Group III (claims 1 – 26) in the reply filed on 01/09/2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Response to Amendment***

2. This office action is in response to Amendment filed on 01/09/2006.
3. Claims **1 – 9** and **22 – 26** have been withdrawn.
4. Claims **13 – 21** have been amended.
5. Claims **27 – 38** have been added.

## **EXAMINER'S AMENDMENT**

6. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it **MUST** be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. James A. Lamb on 03/14/06.

The application has been amended as follows:

Claims **1 – 9, 12, 22 – 26** and **29** have been cancelled;

Claims **10, 11, 13 – 21, 27, 28** and **30 – 38** are presented for examination;

Claims **10** and **27** have been amended as follows:

**Claim 10:**

--10. A method for fabricating a plurality of capacitors embedded in a printed circuit structure, comprising:

fabricating a foil comprising a first electrode layer, a second electrode layer, a crystallized dielectric oxide layer disposed between the first electrode layer and the second electrode layer, and a high temperature anti-oxidation barrier between and contacting the crystallized dielectric oxide layer and at least one of the first and second electrode layers, wherein the crystallized dielectric oxide layer is less than 1 micron thick and has a capacitive density greater than  $1000\text{pF/mm}^2$ ;

adhering the first electrode layer of the foil to a printed circuit sub-substrate;

selectively removing portions of the second electrode layer to form a top electrode of each of the plurality of capacitors and to form exposed portions of the crystallized dielectric oxide layer;

selectively removing portions of the crystallized dielectric oxide layer within the exposed portions thereof to form exposed portions of the first electrode layer; and

selectively removing portions of the first electrode layer within exposed portions thereof to form a bottom electrode of each of the plurality of capacitors;

wherein an essentially coextensive portion of the high temperature anti-oxidation barrier is simultaneously removed with one of the first and second electrode layers;

**Claim 27:**

--27. A method for fabricating a plurality of capacitors embedded in a printed circuit structure, comprising:

adhering a first electrode layer of a foil to a printed circuit sub-structure, wherein the foil the first electrode layer, comprises a second electrode layer, a crystallized dielectric oxide layer disposed between the first electrode layer and the second electrode layer, and a high temperature anti--oxidation barrier between and contacting the crystallized dielectric oxide layer and at least one of the first and second electrode layers, wherein the crystallized dielectric oxide layer is less than 1 micron thick and has a capacitive density greater than 1000pF/mm<sup>2</sup>;

selectively removing portions of the second electrode layer to form a top electrode of each of the plurality of capacitors and to form exposed portions of the crystallized dielectric oxide layer;

selectively removing portions of the crystallized dielectric oxide layer within the exposed portions thereof to form exposed portions of the first electrode layer; and

selectively removing portions of the first electrode layer within exposed portions thereof to form a bottom electrode of each of the plurality of capacitors;

wherein an essentially coextensive portion of the high temperature anti-oxidation barrier is simultaneously removed with one of the first and second electrode layers.--

### ***Information Disclosure Statement***

7. This office acknowledges of the following items from the Applicant:

Information Disclosure Statement (IDS) filed on 12/15/2003.

The references cited on the PTO -1449 form have been considered.

***Allowable Subject Matter***

8. Claims **10, 11, 13 – 21, 27, 28** and **30 – 38** are allowed.

9. The following is an examiner's statement of reasons for allowance: Claims **10, 11, 13 – 21, 27, 28** and **30 – 38** are allowable over the prior art of record because none of the prior art whether taken singularly or in combination, especially when these limitations are considered within the specific combination claimed, to teach:

Steps of:

fabricating a foil comprising an anti-oxidation barrier contacting a crystallized dielectric oxide layer, having a thickness of less than 1 micron thick and has a capacitive density greater than  $1000\text{pF/mm}^2$ , and contacting at least one of a first and second electrode layers of the foil;

selectively removing portions of the first electrode layer;

selectively removing portions of the crystallized dielectric oxide layer;

simultaneously removing an essentially coextensive portion of the high temperature anti-oxidation barrier during steps of removing one of the first and second electrode layers; and

among other limitations as cited in the independent claims 10 and 27.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

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**Conclusion**


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Long K. Tran whose telephone number is 571-272-1797. The examiner can normally be reached on Mon-Thu.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Nelms can be reached on 571-272-1787. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Long Tran 

March 15, 2006

  
**David Nelms**  
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